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ABSTRACT

This paper discusses the results of a study that investigated the validity and reliability of the Ecology Rating Scale (ERS). The ERS is a brief, multi-dimensional level-of-functioning instrument that can be rated by parents or clinicians. The ERS is comprised of seven domains of youth functioning: family, school, emotional, legal/justice, recreational, health, and social. For each domain, respondents are asked to assess the degree to which the child's life is influenced in the particular domain by problems associated with his/her emotional/behavioral difficulties. Each domain is rated on a 5-point scale of severity. Behavioral anchors are written on the scale itself for moderate (3) and severe (5) levels. The validity study involved 74 parents of children (ages 4-18) who were current clients at one of six community mental health centers in Washington state. Results found interrater reliability was strongest for social, recreation, and legal subscales. Other scales had weak interrater reliability. With the exception of the legal subscale of the ERS, all ERS scales provided some evidence of concurrent validity. (Contains 11 references.) (CR)

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Authors

Introduction Method Results Discussion References

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Introduction

Child psychiatric epidemiology is a rapidly developing field (e.g., Brandenburg, Friedman, & Silver, 1990; Costello, 1989; Koot & Verhulst, 1992), and with it, the need for adequate assessment tools has become apparent. Mental health concerns in children can be assessed in a variety of ways including: (a) psychiatric diagnosis using the DSM-IV; (b) level-of-functioning (LOF); (c) diagnosis plus LOF; and (d) exposure to risk factors for mental illness. Most commonly, diagnosis plus indication of LOF is used (Costello, Burns, Angold, & Leaf, 1993). However, there is a lack of adequate LOF instrumentation for youth.

One instrument often used to measure LOF is the Children's Global Assessment Scale (CGAS; Schaffer et al., 1983). This single-item 0 - 100 scale was designed to be parallel in structure to the Global Assessment of Functioning scale for adults (GAF; Endicott, Spitzer, Fleiss, & Cohen, 1976) which is rated as axis V of a DSM diagnosis. Both the CGAS and GAF are intended to be rated by trained clinicians. A weakness of uni-dimensional scales is that they provide little information about the nature and complexity of children's mental health problems. Some youth may have rather prominent emotional/behavior problems in one setting (e.g., home/family, school) but not others. A single rating does not capture such subtleties. Similarly, certain domains are not recognized at all by such a scale (e.g., legal, health). Further, only multi-dimensional scales provide adequate information on which to describe clinically similar groups of youth that can provide the basis for designing services and service packages (e.g., Smukler, Sherman, Srebnik, & Uehara, in press).

The Child and Adolescent Functioning Assessment Scale (CAFAS; Hodges, Bickman, & Kurtz, 1991) addresses some of the weaknesses of uni-dimensional LOF scales. The measure assesses five domains of child functioning: role performance, thinking, behavior, moods/emotions, and

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substance use. Caregiver resources are also rated. Each domain is rated on a 4-point severity scale with behavioral anchors for each rating. This scale is appealing due to its rich behavioral descriptions for each functioning domain, and it has been used in large-scale mental health services projects (e.g., Fort Bragg). However, extensive training of interviewers is needed to obtain adequate inter-rater reliability. Furthermore, the interview itself, on which ratings are based, is lengthy.

Given the limitations of available LOF instruments for children and adolescents, development of a brief multi-dimensional LOF instrument, that requires little or no training to be rated by clinicians as well as parents, would be a valuable contribution to the field. This paper presents data describing the development and preliminary data on such an instrument, the "Ecology Rating Scale."

Methods

Participants

The study collected data from 74 parents of children (age 4-18), who were current clients at one of six community mental health centers in two large geographic regions of Washington state. The regions encompassed rural, suburban and small urban centers. Regions were selected as part of a larger systems' evaluation assessing the impact of replacing mental health process regulations with clinical outcomes as a method of accountability.

The sample was 71% male and 13% ethnic minority. Ninety-three percent were Medicaid-eligible. Diagnoses were primarily adjustment disorder (43%), attention deficit (23%), oppositional defiant disorder (10%), and depression/dysthymia (10%). The sample was representative of the total served child populations of the selected regions in terms of gender, age, diagnostic mix, and income type. Participants who completed baseline surveys were contacted to complete assessment materials again six months later.

Case managers of participating child clients were also asked to complete a brief assessment of client functioning and symptoms. Of the 74 participating child clients, 41 case manager assessments were completed.

Instruments

Ecology Rating Scale. The Ecology Rating Scale (ERS) was designed by quality assurance and children's mental health service staff at a community mental health center with input from families of child clients. The ERS is a brief, multi-dimensional level-of-functioning instrument that can be rated by parents or clinicians. The ERS is comprised of seven domains of youth functioning: family, school, emotional, legal/justice, recreational, health, and social (see Figure 1). For each domain, respondents are asked to "assess the degree to which the child's life is influenced," in

"assess the degree to which the child's life is influenced," in the particular domain, by problems associated with his/her emotional/behavioral difficulties. Each domain is rated on a 5-point scale of severity from no problems to severe problems that represents that degree to which the domain is influenced by the child's emotional/behavioral problems. Behavioral anchors are written on the scale itself for moderate (3) and severe (5) levels.

Conner's Parent Rating Scale. The Conner's Parent Rating Scale (Conners, 1970), is comprised of 48 children's symptoms and behavior problems, each rated on a 4-point severity scale. The instrument is appropriate for use with children age 3 to 17 and when age-by-gender norms are available. The instrument yields five factors: conduct problems, learning problems, psychosomatic symptoms, impulsive-hyperactive symptoms, and anxiety symptoms. Adequate reliability and validity have been demonstrated with this instrument (Conners, 1985).

Children's Global Assessment Scale. For participating child clients, case managers completed a brief functioning and symptom assessment that included the Ecology Rating Scale and the Children's Global Assessment Scale (CGAS; Shaffer et al, 1983) described above. Studies have demonstrated adequate inter-rater reliability as well as concurrent and discriminant validity for the CGAS (Bird, Canino, Rubio-Stipec, & Ribera, 1987; Shaffer, et al., 1983; Steinhausen, 1987).

Information Systems Data. Data gathered from participating agency's information systems provided information on client's socio-demographic characteristics, residential situation, work/school involvement, and service utilization.

Results

The first step in analysis of the adequacy of the ERS was to examine the distribution of scale scores. Scale scores were normally distributed with the exception of scores for legal and health scales, domains for which few children demonstrated difficulties. Reliability and validity were then examined and findings are described below.

Reliability

The reliability of the ERS was examined with respect to both internal consistency and inter-rater reliability. While the ERS is composed of seven domains, each believed to contribute unique information, we did not expect domain ratings to be completely orthogonal. Rather, we expected moderate to high internal consistency for the scale as a whole. Results supported this expectation with alpha coefficients of .70 for parent ratings (N = 65) and .69 for clinician ratings (N = 41).

Inter-rater reliability was tested with ERS scores from 27

Inter-rater reliability was tested with ERS scores from 27 clients rated by two clinicians who reportedly knew the clients well. Results suggested that reliability was potentially adequate for family, legal, recreation, and social domains, with intra-class correlations of .50, .65, .71., and .83 respectively. Intra-class correlations for the remaining scales were less than adequate and are as follows: school (.44), emotions (.37), and health domains (.38). If used as an overall index of functioning, however, the total ERS score demonstrated strong inter-rater reliability with an intra-class correlation of .75.

Validity

Concurrent validity was first examined as the correlation between clinician-rated ERS scores and the CGAS (N = 41). Although school and emotion domains demonstrated relatively weak inter-rater reliability, they were among the scales with stronger concurrent validity with the CGAS, with correlations of .62 and .54., respectively, both significant at the $p < .001$ level. The recreation ($r = .49$) and social scales ($r = .45$) were significantly correlated to the CGAS at the $p < .01$ level. Family, legal, and health domains were moderately, though non-significantly, correlated with the CGAS with correlations ranging from $r = .27$ to .41. The total ERS score was strongly and significantly correlated with the CGAS ($r = .72$, $p < .001$).

Correlations between parent-rated ERS scores and subscale scores of the Conner's Parent Rating Scale were conducted as a second means of obtaining concurrent validity information. Predicted relationships are shown in Table 1.

Consistent with expectations, parents' perceptions of problems in the "family" and "emotions" domains were associated with externalizing behaviors such as the "impulsive-hyperactivity" and "conduct" subscales. Also, as predicted, problems in the "school" domain were associated with learning problems. Health problems were related to anxiety, consistent with expectations regarding the relationship of somatization with anxiety. Social and recreation problems were associated with conduct difficulties. This relationship is reasonable considering that youth with conduct issues will likely have difficulty getting along with others socially and in recreational settings (as well as within the family). Legal problems were also predicted to be associated with the conduct subscale; and the lack of association could be due to restriction of range on the legal domain scale. The ERS total score, as rated by parents, appears to be most highly related to externalizing behavior problems and learning problems, rather than internalizing problems.

Treatment validity was tested through examination of whether ERS scores change over the course of six months of outpatient mental health treatment. The numbers of individuals who demonstrated change, and whether the sample change was significant, according to t-test

sample change was significant, according to t-test comparisons for matched samples is shown in Tables 2 and 3.

Table 2 shows parent ERS ratings, and Table 3 shows case manager ERS ratings. The number of individuals showing improvement relative to those demonstrating no change or declining functioning according to parents is greatest for the following domains: school, emotion, and legal. Case managers also reported many more individuals improving regarding the recreation domain. Overall sample change on the parent-rated ERS scales was significant, and in the expected direction, for two domains. Trends in the expected direction were found for the other ERS scales. Significant change was found on all but the "social" domain for case manager-rated ERS scales.

Discussion

This presentation described a brief, multi-dimensional, LOF instrument for youth, the Ecology Rating Scale (ERS). The ERS assesses functioning across 7 life domains: school, emotions, legal, health, recreation, social, and family. In contrast to extant measures, the ERS has the following unique combination of attributes: (a) assesses multiple domains of functioning, (b) requires little training, and (c) demonstrates promising psychometric properties. While we do not advocate use of any LOF tool without proper training, the psychometric characteristics of the ERS reported here were found without clinicians having any training. Ideally, clinicians using such instruments would periodically conduct formal or informal tests of inter-rater agreement in the course of discussing cases among clinical team members.

Study findings regarding the ERS suggested some areas of internal consistency. Inter-rater reliability was strongest for social, recreation, and legal subscales. Other scales had weak inter-rater reliability, perhaps due to assessing behaviors related to non-clinical settings (e.g., school) or less recognizable internal states (e.g., emotions and health). Hodges (1991) also found weak inter-rater agreement for scales assessing internal states. On the other hand, more behavioral anchors combined with rater training may improve inter rater agreement of the ERS.

Concurrent validity was demonstrated for ERS parent ratings with the Conner's behavior rating scale. Clinician ratings on ERS scales were also correlated with a uni-dimensional LOF measures, the Children's Global Assessment Scale. With the exception of the "legal" subscale of the ERS, all ERS scales provided some evidence of concurrent validity. Correlations with the legal subscale were likely affected by restriction of variance of responses on the subscale. Evidence of treatment validity (i.e., significant change in expected direction following 6 months of treatment) is also demonstrated for ERS scales.

Further development of the ERS is needed. In addition to developing more behavioral anchors for scale points, norms for the scale should be developed on a larger sample that includes higher rates of ethnic minority youth.

Preliminary testing of the ERS demonstrates that it shows promise as a brief, practical tool for LOF assessment in youth receiving community mental health services. Uses for such a tool include clinical outcome assessment, performance measurement, continuous quality improvement, and services research.

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